

$$1) 2x - 6 = 8$$

$$2x = 8 + 6$$

$$2x = 14$$

$$x = 7$$

$$2) 3x + 4 = -8$$

$$3x = -8 - 4$$

$$3x = -12$$

$$x = -4$$

$$3) 3x - 6 = 9 - 2$$

$$3x + 2x = 9 + 6$$

$$5x = 15$$

$$x = 3$$

$$4) 5y - 8 = 2y + 13$$

$$6y - 2y = 13 + 8$$

$$3y = 21$$

$$y = 7$$

$$7) 15m - 2m - 4 = 6m + 12 - 6 = 12m$$

$$13m - 4 = 6m + 12 - 6 - 8m$$

$$13m - 4 = 6m - 8m + 6$$

$$13m - 4 = -2m + 6$$

$$13m + 2m = 6 + 4$$

$$15m = 10$$

$$m = \frac{10}{15}$$

$$12) (x+5)(x-2) = (x+3)(x+4)$$

$$x^2 - 2x + 5x - 10 = x^2 + 4x + 3x + 12$$

$$x^2 + 3x - 10 = x^2 + 7x + 12$$

$$\cancel{x^2} - \cancel{x^2} + 3x - 10 = 7x + 12$$

$$3x - 10 = 7x + 12$$

$$3x - 7x = 12 + 10$$

$$-4x = 22$$

$$x = \frac{22}{-4} = \frac{11}{-2}$$

$$4) \overbrace{(2m+3)(2m-4)}^1 + 1 = 4(m+1)(m+1) + 5$$

$$4m^2 + 8m + 6m - 12 + 1 = (4m+4)(m+1) + 5$$

$$4m^2 - 2m - 11 = 4m^2 + 4m + 4m + 4 + 5$$

$$4m^2 - 2m - 11 = 4m^2 + 8m + 9$$

$$4m^2 - 4m^2 - 2m - 11 = +8m + 9$$

$$-11 + 9 = 8m + 2m$$

$$-2 = 10m$$

$$\frac{-2}{10} = m$$

$$\frac{-1}{5} = m$$

$$15) \overbrace{(4x+2)(4x+6)}^1 + 2 = 16(x-2)(x-2) - 26$$

$$8x^2 - 24x + 8x - 12 + 2 = \overbrace{(16x-32)(x-2)}^1 - 26$$

$$8x^2 - 16x - 10 = 8^2 + 32x - 32x + 64 - 26$$

$$8x^2 - 8x^2 - 16x - 10 = +38$$

$$-16x = 38 + 10$$

$$-16x = 48$$

$$x = 48/16$$

$$x = 3$$